

1/2 020
UNCLASSIFIED
TITLE--AQUEOUS PRIMING COMPOSITION BASED ON MICROGELS OF PYRIDINE
CONTAINING COPOLYMERS -U-
AUTHOR--(04)-TOLMACHEV, I.A., VERKOLANTSEV, V.V., TSALINGOLD, V.L.,
KOSMODEMYANSKIY, L.V.
COUNTRY OF INFO--USSR
PROCESSING DATE--04DEC70
SOURCE--LAKOKRASOCH. MATER. IKH. PRIMEN. 1970, (2), 36-40
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--FLUID VISCOSITY MEASUREMENT, PYRIDINE, COPOLYMER, STYRENE,
GEL, RUBBER/(U)SKS65MVP10 SYNTHETIC RUBBER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605019/B07 STEP NO--UR/0303/70/000/002/0036/0040
CIRC ACCESSION NO--AP0140902
UNCLASSIFIED

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CIRC ACCESSION NO--AP0140902
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT. VISCOSITY MEASUREMENTS INDICATED THAT PYRIDINE CONTG. COPOLYMERS, E.G., SKS-65 MVP-10 (I) MODIFIED WITH 50PERCENT H SUB3 PD SUB4 AND OP-10 COULD BE USED FOR PRIMING RUSTY SURFACES. MICROHARDNESS MEASUREMENTS AND MICROPHOTOGRAPHY SUGGESTED THAT I PARTICLES AGGLOMERATED AND THE FILM WAS FORMED FROM THE LARGER PARTICLES. SEVERAL EQUATIONS WERE DERIVED FOR THE EVALUATION OF THE DEGREE OF PIGMENTATION OF MICROGELS.

UNCLASSIFIED

USSR

UDC 621.357.6:66.067.3(088.8)

TARASOV, Yu. A., GARBUZOV, N. V., TSAKHNOVSKIY, I. M., VASIL'KO, N. P.

"Galvanoplastic Method of Manufacture of Metal Filters"

USSR Author's Certificate No 305209, Filed 27/01/70, Published 13/07/71,
(Translated from Referativnyy Zhurnal, Khimiya, No 3, 1972, Abstract No
3 L331 P by K. S. Pedan).

Translation: A galvanoplastic method is suggested for the manufacture of metal filters by means of electrolytic precipitation of a metal layer onto a matrix, differing in that in order to increase the quality of the filters, the process is performed in an electrolyte containing 0.5-4% of a suspension of insoluble organic particles, and the coatings produced are heat treated until the enclosed organic particles are fully burned out. Example. An Ni coating is applied to a matrix from an electrolyte with a composition of (in g/l): $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ 300; H_3BO_3 30, temperature 50-55°, D_c 2-4 a/dm² and pH 4-4.5. When a powder of an insoluble organic compound such as polyethylene is dispersed in this electrolyte at between 0.5 and 4% with subsequent heat treatment at 400-450° for 1-1.5 hr, it is possible to regulate the quantity of pores in the Ni coatings produced. The pore size in the filter can be changed by changing the dimensions of the particle introduced to the electrolyte. It is pointed out that this method allows the production of filters with high filtering capacity of many metals and alloys.

- 34 -

1/2 006 UNCLASSIFIED PROCESSING DATE--04DEC70 /
TITLE--PRODUCTION OF HIGH YIELD SEMICHEMICAL PULPS FOR CORRUGATED PRODUCTS /
-U-
AUTHOR--(05)-SHAPIRO, A.R., SHTOFENMAKHER, N.A., ONOKHIN, I.P., PUZYREV,
S.A., TSAL, TS.K.
COUNTRY OF INFO--USSR
SOURCE--ZELLST. PAPIER (LEIPZIG) 1970, 19(4), 107-8
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, BEHAVIORAL AND SOCIAL SCIENCES

TOPIC TAGS--PAPER PRODUCT, INDUSTRIAL PRODUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/1349

STEP NO--GE/0091/70/019/004/0107/0108

CIRC ACCESSION NO--AP0130359

UNCLASSIFIED

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006

UNCLASSIFIED

PROCESSING DATE--04DEC70

RC ACCESSION NO--AP0138359

ABSTRACT/EXTRACT--(U) GP-0-

WAS DISCUSSED WITH RESPECT
VNIIB, LENINGRAD, USSR.

ABSTRACT. A LECTURE WITH NO REFS. THE TOPIC
TO THE "PTK" PROCESS. FACILITY:

UNCLASSIFIED

USSR

UDC: 621.396.677(088.8)

TSALENCHUK, M. R., SAMARYANOVA, M. A., SHALINOVA, G. F., BYKOVA, T. A.,
IVANOV, A. F.

"A Device for Monitoring the Working Order of High-Frequency Channels"

USSR Author's Certificate No 265983, filed 10 Jun 68, published 3 Jul 70
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1B103 P)

Translation: The proposed device contains a two-terminal plug to which a high-frequency oscillator is connected with DC power supplies. To simplify and speed up the monitoring process, the oscillator and power supplies are enclosed in the housing of the plug holder.

Acc. Nr: **AP 0047241**

PRIMARY SOURCE: *Urologiya i Nefrologiya*, 1970, Nr **7-11**

Ref. Code: **UR 0606**

ACTIVITY OF LACTATEDEHYDROGENASE IN SOME DISEASES OF THE KIDNEYS
G. P. Shultsev, Ya. P. Tsalenchuk, A. A. Anders

The authors studied the activity of lactate dehydrogenase (LDH) in 15 healthy persons and in 74 patients suffering from various diseases of the kidneys and the urinary tracts. It was found that determination of LDH activity in the blood and urine served as a valuable auxiliary diagnostic test. A rise of urinary excretion of this enzyme may point to affection of the kidneys. Determination of LDH in the urine may be of value in the diagnosis of latent pyelonephritis and of malignant tumours of the kidney and the urinary bladder.

REEL/FRAME
19790748

DI 2

Adsorption

USSR

UDC 541.183.5:546.831+546.832

TSALETKA, R.

"Adsorption of Readily Hydrolyzed Elements on Silica Gel. I. Adsorption of Zirconium and Hafnium from Inorganic Acid Solutions"

Leningrad, Radiokhimiya 12, No 3, 1970, pp 448-455

Abstract: The adsorption of zirconium and hafnium on silica gel was studied as a function of the concentration of HClO_4 , HNO_3 , HCl , and H_2SO_4 . The results obtained are explained in terms of molecular adsorption of hydrolysis products and neutral complexes with the acid anions used as electrolyte. Hydration is the fundamental factor affecting the adsorption of the individual complexes. As the energy of hydration increases ($\text{HClO}_4 < \text{HNO}_3 < \text{HCl}$), the coefficient of adsorption for both Zr and Hf decreases.

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1/2 013 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--THE DISTRIBUTION OF CYCLOPOIDA, COPEPODA, IN THE NORTHEASTERN PART
OF THE INDIAN OCEAN. THE BIOMASS OF CYCLOPOIDA AND THE HORIZONTAL
AUTHOR--TSALKINA, A.V.
COUNTRY OF INFO--USSR, INDIAN OCEAN
SOURCE--OKEANOLOGIYA, 1970, VOL 10, NR 3, PP 505-516
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, EARTH SCIENCES AND
OCEANOGRAPHY, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--MARINE BIOLOGY, OCEAN/(U)VITYAZ OCEANOGRAPHIC SHIP
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3002/1843 STEP NO--UR/0213/70/010/003/0505/0516
CIRC ACCESSION NO--AP0129206
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0129206

ABSTRACT/EXTRACT--[U] GP-0- ABSTRACT. THE MATERIAL WAS COLLECTED BY THE R.V. VITYAZ FROM THE MERIDIONAL SECTION ALONG 86-90DEGREEE LONGITUDE IN THE NORTHEASTERN INDIAN OCEAN IN DECEMBER 1959 THROUGH JANUARY 1960. CATCHES WERE MADE WITH JCM NETS AT STANDARD DEPTHS FROM 0 TO 25 M 25 TO 50 M, 50 TO 100 M, 100 TO 200 M AND 200 TO 500 M. THE SPECIFIC FEATURES IN THE DISTRIBUTION OF BIOMASS OF THE MASS SPECIES OF CYCLOPOIDA WERE STUDIED AS DEPENDENT ON THE FRONTAL ZONES. THE MINIMUM BIOMASS WAS OBSERVED IN THE HALISTIC AREA (FROM 30 TO 18DEGREEE LATITUDE) AND THE MAXIMUM BIOMASS, IN THE EQUATORIAL DIVERGENCE ZONE (FROM 4 TO 7DEGREEE LATITUDE). THE BIOMASS MAXIMA OF THE REPRESENTATIVES OF THREE DIFFERENT FAMILIES, OITHONIDAE, ONCAEIDAE AND CORYCAEIDAE ARE SEPARATED IN SPACE AND ARE ENCOUNTERED IN THREE DIFFERENT DIVERGENCE ZONES. THIS PHENOMENON IS CAUSED NOT ONLY BY DIFFERENT INTENSITY OF UPWELLING IN THESE REGIONS BUT ALSO BY THE SIMILARITY IN THE TYPE OF FEEDING, FOR WHICH REASON THE SPATIAL SEPARATION OF THE CONCENTRATIONS OF THE MASS SPECIES FAVORS EVIDENTLY THE MITIGATION OF THE COMPETITION FOR FOOD. THE CHARACTER OF THE VERTICAL DISTRIBUTION OF THE SPECIES STUDIED IS SHOWN TO BE RELATED TO THEIR QUANTITATIVE CHANGES IN THE REGIONS WITH DIFFERENT WATER DYNAMICS. THE GEOGRAPHICAL DIFFERENCES IN THE QUANTITATIVE RELATIONSHIPS BETWEEN THE REPRESENTATIVES OF DIFFERENT FAMILIES ARE EMPHASIZED. FACILITY: INSTITUT OKEANOLOGII IM P. P. SHIRSHOVA AN SSSR.

UNCLASSIFIED

BALAKIN, V. B., SAVINKOV, V. M., TSAL'P, V. D.
"Collected Programming Exercises"

UDC 681.3

Sbornik Uprazhneniy Po Programirovaniyu, [English Version Above], Moscow,
Vyssh. Shkola Press, 1970, 463 pages, (Translated from Referativnyy Zhurnal
Kibernetika, No. 5, 1971, Abstract No. 5V595 K).

No Abstract.

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USSR

UDC 539.4

GREBENIK, V. M., DIDYK, R. P., TESLENKO, A. G., TSANKO, V. K., (Dnepropetrovsk)

"Fatigue Strength of Metals with Explosive Hardening"

Kiev, Problemy Prochnosti, No 8, 1972, pp 114-116.

Abstract: The fatigue strengths of metals subjected to explosive hardening is estimated. Analysis of the data produced experimentally showed that the change in fatigue strength (increase in fatigue limit) resulting from explosive hardening is approximately 1.5 kg/mm^2 for a steel containing 0.42% C, 0.52% Mn, 0.23% Si, 0.61% Cr and 1.14% Ni following an explosion producing a pressure at the division boundary between explosion products and metal of 220 kbar. The sharp increase in strength characteristics and changes in hardness of surfaces produced for a steel with 0.46% C, 0.77% Mn, 0.39% Si, 1.16% Cr and 0.15% Ni make this material particularly resistant to wear and the influence of sign-changing loads.

021
UNCLASSIFIED
TITLE--DYNAMICS OF ELECTROENCEPHALOGRAM CHANGES IN RABBITTS WITH THE BROWN
PEARCE CARCINOMA UNDER COMBINED ZYMOSAN AND CYCLOPHOSPHANE TREATMENT -U-
AUTHOR--(02)-VEKSLER, I.G., TSAPENKO, V.E.
PROCESSING DATE--23OCT70
COUNTRY OF INFO--USSR
SOURCE--DOPOV. AKAD. NAUK UKR. RSR, SER B 1970, 32(2), 174-6
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--CARCINOMA, ANTINEOPLASTIC DRUG, ELECTROENCEPHALOGRAPHY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1998/1017
STEP NO--UR/0442/70/032/002/0174/0176
CIRC ACCESSION NO--AT0121613
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0121613

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. RABBITS WITH BROWN PEARCE
CARCINOMA TRANSPLANTED I. M. AND TREATED WITH ZYMOSAN AND CYCLOPHOSPHANE
SHOWED MORE NORMAL ELECTROENCEPHALOGRAMS AND SMALLER DEVIATION FROM THE
INITIAL BIDELEC. ACTIVITY THAN ANIMALS TREATED ONLY WITH CYCLOPHOSPHANE.
FACILITY: KIIV. NAUK. DOSLID. INST. EKSP. KLIN. ONKOL. KIEV,
USSR.

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"APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R002203330004-4

UNCLASSIFIED

PROCESSING DATE--16OCT70

ELECTROPHYSIOLOGICAL FEATURES OF THE NERVOUS SYSTEM WITH MALIGNANT
GROWTH AND SOME INFLUENCES ON IT -U-
AUTHOR--(104)-BALITSKIY, K.P., VEKSLER, I.G., TSAPENKO, V.F., KAPSHUK, A.P.

COUNTRY OF INFO--USSR

SOURCE--FIZIOLOGICHNIY ZHURNAL, 1970, VOL 16, NR 3, PP 345-350

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ELECTROPHYSIOLOGY, TISSUE TRANSPLANT, REPRODUCTIVE SYSTEM,
ELECTROENCEPHALOGRAPHY, ANTIEDOPLASTIC DRUG, CARCINOMA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1994/1358

CIRC ACCESSION NO--AP0115330

STEP NO--UR/0238/70/016/003/0345/0350

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R002203330004-4"

ABSTRACT/EXTRACT--(U) GP-0-
 DURING PROGRESSIVE GROWTH OF THE BROWN PEARCE CARCINOMA INOCULATED
 INTRATESTICULARLY AND, AS A RULE, RESULTING IN IRREVERSIBLE CANCERATION,
 THE ELECTROENCEPHALGRAMS OF RABBITS DISPLAY TWO PHASES OF MAIN CHANGES
 PHASE OF RAISED ACTIVITY AND THAT OF DEPRESSION. WHILE IN RABBITS WITH
 CARCINOMA, INOCULATED HYPODERMICALLY AND INTRAMUSCULARLY, ONLY THE PASE
 OF RAISED ACTIVITY OF INDICES APPEARS. THEN THE ELECTROENCEPHALGRAM
 NORMALIZES. THE INVESTIGATION SHOWED, THAT THE RABBITS WITH THE BROWN
 PEARCE CARCINOMA, TRANSPLANTED INTRAMUSCULARLY AND GREATED WITH
 ZYMOSAN AND ANTITUMOUR DRUG CYCLOPHOSPHAN HAVE THE BASE INDICES OF
 ELECTROENCEPHALGRAM MORE LOWER AND THE DIFFERENCE FROM THE INITIAL
 BIDELECTRIC ACTIVITY IS SMALLER, THEN THE ANIMALS, TREATED ONLY WITH
 CYCLOPHOSPHAN IN THE SAME DOSAGE. THE RESEARCHES PRESENTED SHOW THAT
 THE DEVELOPMENT OF A TUMOUR PROCESS IS ACCOMPANIED BY A FREQUENCY
 DECREASE OF THE AFFERENT IMPULSION WHICH IS RECEIVED IN THE CENTRAL
 NERVOUS SYSTEM FROM THE REGION OF THE TUMOUR DEVELOPMENT. AT THE TUMOUR
 RESOLUTION THE FREQUENCY OF THE AFFERENT IMPULSION IS RESTORED TO THE
 INITIAL VALUE; AT THE IRREVERSIBLE DEVELOPMENT OF THE TUMOUR THE DROP OF
 FREQUENCY CONTINUES UP TO ANIMAL DEATH. THE INVESTIGATION INDICATES
 THAT THE NATURE AND STAGE OF THE TUMOUROUS PROCESS HAVE A SUBSTANTIAL
 EFFECT ON THE FUNCTIONAL STATE OF VARIOUS DIVISIONS OF THE NERVOUS
 SYSTEM. THE DYNAMICS OF THE CHANGES IN THE ELECTROENCEPHALGRAM IS, TO
 A CERTAIN EXTENT, AN EVIDENCE OF THE NATURE OF THE COURSE OF THE
 MALIGNANT PROCESS.

UNCLASSIFIED

LIRC ACCESSION NO--AP0115330

UNCLASSIFIED

PROCESSING DATE--16OCT70.

ABSTRACT/EXTRACT--THE DEVELOPMENT OF THE TUMOUR AFFECTS THE CHARACTER OF
THE AFFERENT IMPULSATION.

FACILITY: LABORATORY OF PATHOGENESIS
OF TUMOURS, RESEARCH INSTITUTE OF EXPERIMENTAL AND CLINICAL ONCOLOGY,
KIEV.

UNCLASSIFIED

UNCLASSIFIED
SEMICONDUCTOR PROPERTIES OF PYROLYZED CUPRENE OBTAINED BY A
RADIATION METHOD -U-
AUTHOR-(03)-TSAPUK, A.K., VOZZHENNIKOV, V.M., VERESHCHINSKIY, I.V.
PROCESSING DATE--27NOV70
COUNTRY OF INFO--USSR
SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(4), 283-6
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, PHYSICS
TOPIC TAGS--SEMICONDUCTOR MATERIAL, GAMMA IRRADIATION, ACETYLENE, ARGON,
OXIDATION, ELECTRICAL INSULATION, ELECTRON PARAMAGNETIC RESONANCE, X RAY
ANALYSIS, IR SPECTRUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3006/1246
CIRC ACCESSION NO--AP0134920
STEP NO--UR/0460/70/012/004/0283/0286
UNCLASSIFIED

272 053
CIRC ACCESSION NO--AP0134920
ABSTRACT/EXTRACT--(U) GP-0- UNCLASSIFIED
PROCESSING DATE--27NOV70
ABSTRACT. COND. MEASUREMENTS OF CUPRENE (I)
(OBTAINED BY GAMMA IRRADN. OF C SUB2 H SUB2 PLUS AR MIXT. (1:9) WITH 120
MEGARAD) AND ITS MODIFIED PRODUCTS, CONDUCTED AT 220-500DEGREES,
INDICATED THAT PYROLYZED I WAS A SEMICONDUCTOR (E EQUALS 0.55-0.74 EV),
WHEREAS I AND OXIDIZED I WERE INSULATORS. EPR AND IR SPECTRA AS WELL AS
X RAY PATTERNS SUGGESTED THAT COND. WAS NOT DUE TO PARAMAGNETIC CENTERS.
FACILITY: FIZ.-KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 669.71.018.9

AGEYEVA, G. N., ZOLOTOREVSKIY, V. S., TELESHOV, V. V., TSAREGORODTSEVA, A. I.

"Influence of Homogenization Modes of Ingots on Structure and Properties of Semi-finished Goods of Alloys in the Al-Zn-Mg System with $Zn/Mg \approx 2$ "

Metallurgiya [Metallurgy -- Collection of Works], No. 15, Leningrad, Sudostroyeniye Press, 1970, pp. 113-120. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G171 by the authors).

Translation: Combined analysis of the structure and properties of ingots and semifinished goods of an alloy in the Al-Zn-Mg system with ratio of $Zn/Mg \approx 2$ establishes the influence of homogenization modes on the final structure and properties of semifinished goods of this alloy. An accelerated mode of homogenization of ingots of the alloy Al-Zn-Mg with $Zn/Mg \approx 2$ is recommended for industrial testing. 2 figs; 5 tables; 6 biblio refs.

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USSR

DZHELEPOV, B. S., POPOVA, T. I., PRIKHODTSEVA, V. P., and TSARITSYNA, L. G.
 " γ -Radiation of ^{65}Ga "

UDC 539.163

Moscow, Izvestiya Akademii Nauk SSSR -- Seriya Fizicheskaya, Vol XXXV, No 8,
 1971, pp 1575-1581

Abstract: Using a Ge(Li)-detector with a sensitive capacity of ~ 33 cubic centimeters, the authors studied the gamma-ray spectrum of ^{65}Ga ($T_{1/2} = 15.2$ minutes). They used the accelerator at the Laboratory of Nuclear Reactions, Joint Institute for Nuclear Research, with boron ions having an energy of 40 million electron volts. Although the authors selected the reaction $^{56}\text{Fe}(^{11}\text{B}, 2n)^{65}\text{Ga}$ as their source of ^{65}Ga because it does not produce very large admixtures of the undesirable ^{66}Ga , they did not succeed in eliminating ^{66}Ga completely. In a number of cases this made it more difficult to identify weak lines in the region above 800 kilo electron volts. The authors succeeded in determining the energies and intensities of 24γ -lines; 21 of these lines were associated with the disintegration of ^{65}Ga . They also computed the intensities of the gamma rays in percents of disintegrations. Finally, they compared their results with those cited in several other articles on the same topic, discussing the similarities and differences in some detail.

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AA0034466

Abstracting Service:
CHEMICAL ABST. 4-70

Ref. Code

UK 0000

73098j Glass for laser generators and laser amplifiers.
Buzhinskii, I. M.; Zhabotinskii, M. E.; Rudnitskii, Yu. P.;
Tsapkina, I. V.; Elert, G. V. (Institute of
Radio Engineering and Electronics, Academy of Sciences, U.S.S.R.)
Brit. 1,177,731 (Cl. C 09k), 14 Jan 1970, Appl. 01 Jan
1968; 5 pp. A laser generator or amplifier glass is described
which is composed of 1 or more alkali metal oxides, Nd oxide, 20
to 90% by wt. P_2O_5 , and an additive consisting of an Al halide
and/or a Sn halide. The total wt. percentage of the additive is
 ≤ 20 . To illustrate, a glass is obtained from an original stock com-
posed of a mixt. of finely crushed $LiPO_4$ 39, $NaPO_4$ 46, $AlPO_4$ 7,
 AlF_3 4.7, and Nd_2O_3 3.3% by wt. by melting in a quartz crucible
at 850 to 1050° during 3 to 6 hr and under const. stirring with a
quartz agitator. Discharge of finished glass and its annealing
are carried out in accordance with the production techniques
usually adopted in the silicate-glass manufacturing art. The
product, capable of emitting light energy on the 1060 nm wave-
length, is composed of Li_2O 8.2, Na_2O 17, Al_2O_3 4.0, AlF_3 7.7,
 P_2O_5 60, and Nd_2O_3 3.1%. Its specific wt. is 2.52 g/cm³ and n
1.524. The spectral-luminescent characteristics of the glass are:
half-width of the luminescent band at 1060 nm ~ 16 nm; life-

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time of Nd^{3+} when excited 250×10^{-8} sec; quantum yield of luminescent energy at 1060 nm, 0.4 ± 0.05 ; inactive absorption at 1060 nm $> 10^{-4} \text{ cm}^{-1}$. The generation threshold of a light quantum generator employing the proposed material is substantially lower than in the case of silicate glass. The spectrum of a laser based on phosphate glass is practically independent of the pumping level equalling 8 Å in a strip-line resonator and 3 Å in a spherical-cavity resonator. The above-described method of obtaining the glass allows emission at 1060 nm for pumping sources at 7000°K.

Ramona Mayer

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USSR

UDC 546.791.6-386

ELLERT, G. V., TSAPKINA, I. V., BARANOVA, L. P.

"Mixed Crystals of Compounds with Complex Cations $[\text{UO}_2\text{4CO}(\text{NH}_2)_2\text{H}_2\text{O}]_2^{2+}$ and $[\text{UO}_2\text{5CO}(\text{NH}_2)_2]^{2+}$ "

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 15, No 7, 1970, pp 1891-1898

Abstract: This study deals with synthesis of compounds based on carbamide complexes of uranyl. The investigation concerned reactions of aquotetracarbamidouranyldinitrate $[\text{UO}_2\text{4KaH}_2\text{O}](\text{NO}_3)_2$ (I) $\text{Ka-Co}(\text{NH}_2)_2$ and pentacarbamidouranyldinitrate $[\text{UO}_2\text{5Ka}](\text{NO}_3)_2$ (II) with sodium halogenides NaH ($\text{H} = \text{Cl}, \text{Br}, \text{I}$) in aqueous and alcoholic solutions. It was found that in aqueous solutions only one nitrate ion in (I) is replaced by a halogen ion. Here the nitratobromides and nitratobromides form mixed crystals of composition $[\text{UO}_2\text{4KaH}_2\text{O}]\text{H}_x\cdot(\text{NO}_3)_{2-x}$ ($\text{H}=\text{I}, \text{Br}; x = 0-1$). In similar conditions the chloridonitrate forms two individual compounds $[\text{UO}_2\text{4KaH}_2\text{O}]\text{ClNO}_3$ and $[\text{UO}_2\text{4KaH}_2\text{O}]\text{Cl}_{0.5}(\text{NO}_3)_{1.5}$. In alcoholic solutions two nitrate ions can be replaced by one iodine ion in (I), yielding $[\text{UO}_2\text{4KaH}_2\text{O}]\text{I}_2$ and $[\text{UO}_2\text{4KaH}_2\text{O}]\text{I}_x(\text{NO}_3)_{2-x}$ ($x = 1.4-2$). In (II), both in alcoholic and aqueous solutions, both

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ELLERT, G. V., et al., Zhurnal Neorganicheskoy Khimii, Vol 15, No 7, 1970, pp 1891-1898

nitrate ions can be replaced by iodine ions. Formation of nonstoichiometric nitrateiodides of composition $[\text{UO}_2.5\text{Ka}(\text{NO}_3)_{2-x}]$ ($x = 1.43-1.27$) was observed. A compound of composition $[\text{UO}_2.5\text{Ka}]-\text{NO}_3\text{Cl}$ was isolated.

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AA0034466

Abstracting Service:
CHEMICAL ABST.

4-70

Ref. Code

UK 0000

2

73098j Glass for laser generators and laser amplifiers.
Buzhinskii, I. M.; Zhabotinskii, M. E.; Rudnitskii, Yu. E.;
Isankina, L. V.; Elert, G. Y. (Institute of
Radio Engineering and Electronics, Academy of Sciences, U.S.S.R.)
Brit. 1,177,731 (Cl. C 09k), 14 Jan 1970, Appl. 01 Jan
1968; 5 pp. A laser generator or amplifier glass is described
which is composed of 1 or more alkali metal oxides, Nd oxide, 20
to 90% by wt. P_2O_5 , and an additive consisting of an Al halide
and/or a Sn halide. The total wt. percentage of the additive is
 ≤ 20 . To illustrate, a glass is obtained from an original stock com-
posed of a mixt. of finely crushed $LiPO_4$ 39, $NaPO_4$ 46, $AlPO_4$ 7,
 AlF_3 4.7, and Nd_2O_3 3.3% by wt. by melting in a quartz crucible
at 850 to 1050° during 3 to 6 hr and under const. stirring with a
quartz agitator. Discharge of finished glass and its annealing
are carried out in accordance with the production techniques
usually adopted in the silicate-glass manufacturing art. The
product, capable of emitting light energy on the 1060 nm wave-
length, is composed of Li_2O 8.2, Na_2O 17, Al_2O_3 4.0, AlF_3 7.7,
 P_2O_5 60, and Nd_2O_3 3.1%. Its specific wt. is 2.52 g/cm³ and n
1.524. The spectral-luminescent characteristics of the glass are:
half-width of the luminescent band at 1060 nm ~ 16 nm; life.

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time of Nd^{3+} when excited 250×10^{-8} sec; quantum yield of luminescent energy at 1060 nm, 0.4 ± 0.05 ; inactive absorption at 1080 nm $> 10^{-3} \text{ cm}^{-1}$. The generation threshold of a light quantum generator employing the proposed material is substantially lower than in the case of silicate glass. The spectrum of a laser based on phosphate glass is practically independent of the pumping level equalling 8 Å in a strip-line resonator and 3 Å in a spherical-cavity resonator. The above-described method of obtaining the glass allows emission at 1060 nm for pumping sources at 7000°K.

Ramona Mayer

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19711141

di

UDC 624.072.2

TSAPKO, N. P., Candidate of Technical Sciences, Scientific Research Institute of Concrete and Reinforced Concrete, GRACHEV, I. A., Engineer, Reinforced Concrete Products Plant-1 of Zaporozhzhelobeton Combine, and PETROV, I. A., Engineer, Central Scientific Research, Planning, and Experimental Institute of Industrial Buildings and Structures

"Investigation of the Working of a Prestressed Ferroconcrete Girder, 24 m Span, of Heavy Concrete, and 700 kg/cm² Cubic Strength"

Moscow, Beton i Zhelezobeton, No 6(219), Jun 73, pp 5-7

Abstract: The shown prestressed ferroconcrete girder FS-24-11 NPE, 24-m span, 700-kg/cm² cubic strength, passed the factory tests under conditions of Zaporozhzhelobeton Combine in the year 1969. The presented test results of the girder at normal and rated loads and at 0.83 and 0.945 of the breaking load proved its high quality. The use of high-strength concrete (make 700) and appropriate reinforcement make it possible considerably to widen the application range of frame girders without changing the sectional dimensions of their members. The tested girder meets the requirements of GOST 8829-66 with respect to strength, resistance to cracking, and rigidity. Three figures, four bibliographic references.

1/1

- 34 -

USSR

UDC 669.14+15:539.43

GREBENIK, V. M., GORDIYENKO, A. V., and TSAPKO, V. K., Dnepropetrovsk Metallurgical Institute

"Dependences Between the Fatigue and Static Characteristics of Carbon and Alloyed Steels"

Moscow, Izvestiya VUZ, Chernaya Metallurgiya, No 10, 1973, pp 164-169

Abstract: As a result of the statistical processing of a large amount of experimental data the authors have found the dependences between the fatigue and the static characteristics individually for carbonaceous and alloyed steels. They give evaluations of the dependences obtained that permit determining the necessary characteristics with the required confidence and using them for designing components for strength and durability.

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USSR

GREBENIK, V. M., et al., Izvestiya VUZ, Chernaya Metallurgiya, No 10, 1973,
pp 164-169

The authors use several graphs to illustrate their findings. They have compiled one long table to show numerically the results of a correlation analysis of the fatigue and static characteristics of carbonaceous and alloyed steels.

The article contains 3 illustrations, 1 table, and 4 bibliographic references.

2/2

- 39 -

USSR
Acoustics

USSR

UDC: 534.2

MERKULOVA, V. M., TSAPLEV, V. M.

"Measuring Velocities and Internal Friction Accompanying Longitudinal and Torsional Vibrations in a Medium With Microcracks"

Tr. Taganrog. radiotekhn. in-ta (Works of Taganrog Radio Engineering Institute), 1973, vyp. 34, pp 146-155 (from RZh-Fizika, No 5, May 73, abstract No 5Zh567 by V. I. Uchastkin)

Translation: Phase velocities and internal friction for the longitudinal and torsional modes were measured by the method of resonance oscillations of a composite vibrator on ultraporcelain rods on a frequency of 36 kHz under compressive loads of up to 1400 kg/cm. It was found that microcracks which can be observed visually by applying methylene dye were developed when the specimens were tempered. After tempering, the phase velocity in the material decreases, while there is an increase in internal friction. Additional acoustic absorption is caused by shear stresses on the boundary between the crack and the viscous filler and also by diffraction scattering of sound from the edges of the crack. By using the well-known results of diffraction of a normal Lamb wave on the edge of a semi-infinite crack in an elastic plate, the authors evaluated the mean square

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USSR

MERKULOVA, V. M., TSAPLEV, V. M., Tr. Taganrog. radiotekhn. in-ta, 1973,
vyp. 34, pp 146-155

distance between crack channels. The fact that loading does not affect
the parameters of torsional vibrations is attributed to the radial orientation of the cracks -- elastic displacement normal to a boundary does not excite viscous waves.

2/2

- 1 -

USSR

UDC 911.3:616.988.25 (571.1)

TSAPLIN, I. S., and BUSYGIN, F. F.

"Epidemiological Characteristics of Tickborne Encephalitis and Omsk Hemorrhagic Fever in the "Transition" Zone of the West Siberian Lowlands"

V sb. Vopr. infekts. patol. (Problems of Infection Pathology -- collection of works), Vyp. 2. Omsk, 1970, pp 31-33 (from RZh-Meditsinskaya Geografiya, No 4, Apr 71, Abstract No 4.36.62)

Translation: Results of the sero-epidemiological survey of the population show wide fluctuation limits for potential epidemiological valence in natural foci of tickborne encephalitis and Omsk hemorrhagic fever. Four types of pseudofoci are isolated and briefly described: those lying on the border of southern taiga and sub-taiga aspen-birch forests in the south Siberian lowlands, directly circling the forests; those of the "transition" subzone of the sub-taiga aspen-birch forests; pseudofoci of Omsk hemorrhagic fever in the zone of outbreaks of this infection associated with the northern forest steppe; and those of the steppe zone.

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- 31 -

USSR

TSAPLIN, I. S., and BUSYGIN, F. F.

UDC 911.3:616.988.25(571.1)

"Characteristics of Population Contacts With Ticks at the Junction of Distribution Zones of the Tickborne Encephalitis and Omsk Hemorrhagic Fever"

V sb. Vopr. infekts. patol. (Problems of Infection Pathology -- collection of works) Vyp. 2. Omsk, 1970, pp 38-40 (from RZh-Meditsinskaya Geografiya, No 4, Apr 71, Abstract No 4.36.63)

Translation: Data was collected by house to house study of population contact with Ixodes ticks in 16 settlements in Omskaya and Novosibirskaya oblasts. Higher contact indices (26%) were noted in areas in the southern part of the southern taiga subzone, as well as at its junction with the aspen-birch forest subzone; lower indices (2.1%) were noted in the steppe zone. Mature people are more frequently attacked by ticks as a result of their labors in the forest: gathering wood, etc. Outbreaks of Omsk hemorrhagic fever and encephalitis are seldom noted; when noted, they are in areas of low frequency population contact with ticks.

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USSR

PETROVSKIY, V. S., TSAPLIN, M. I.

UDC 621.438-251:536.24.001.24

"Boundary Conditions in Heat Conductivity Problems for Gas Turbine Rotors"

Tr. Mosk. aviats. tekhnol. in-ta (Works of Moscow Aviation Technological Institute), 1971, No. 72, pp 5-19 (from RZh-Turbostroyeniye, No 8, Aug 71, Abstract No 8.49.98)

Translation: The forms of boundary conditions encountered in formulating heat conductivity problems for gas turbine rotors do not always correspond to actual conditions. The data presented provides some foundation for assuming that in certain cases one should solve the heat conductivity problem for the disc and blade simultaneously. This is feasible when data on the preliminary gasdynamic calculation of the flow portion of the turbine and the gasdynamic calculation of the cooling of the rotor are the only initial data for calculating the temperature state of the rotor. 5 ill., 3 ref.

1/1

- 150 -

Rad / 18 460/5.111.12
 where $h_0 = 50$ m. For $h > 3$ km, it becomes

$$C_1^2(h) = C_1^2(h_0) \exp\left(-\frac{h-h_0}{h_0}\right), \quad (3)$$

Using the foregoing expressions for $C_1^2(h)$ in a dimensionless fashion, the authors compare their calculated results with those of several other authors for altitudes up to about 10 km; those results are given graphically. A further analysis shows that less turbulence broadening is suffered when transmitting downward than upward through the atmosphere; this however is not contradictory if the finite dimensions of the transmitter aperture are considered, rather than the point source assumed in the theoretical calculations. It is also shown that for downward propagation, the maximum turbulence scattering will consistently occur at the same transmitter altitude; the authors' data put this at approximately 2 km.

Tsaplin, V. S. and L. V. Zubareva.
Transmission and spatial intensity
distribution of excess radiation in
the vicinity of the equator. GFA,
no. 3, 1972, 536-537.

Satellites of the Kosmos series were launched from July 1965 through March 1969, into orbits with apogees of about 350 km, i.e. such that over 80% of the time the satellites were well below the radiation belts of the earth. A gasdischarge counter installed on each spacecraft registered on the basis of a direct passage, electrons with an energy of $E_e > 8$ Mev and protons with an energy of $E_p > 60$ Mev. The

"APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R002203330004-4

UNCLASSIFIED
THE MORPHOLOGY AND FUNCTION OF THE PANCREAS IN RATS -U-
AUTHOR--SHEVCHUK, I.A., TSAPOK, P.I.
PROCESSING DATE--11SEP70
COUNTRY OF INFO--USSR
SOURCE--PROBL. ENDOKRINOL. 1970, 16(1), 75-9
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--THYROID GLAND, THYROID HORMONE, BLOOD CHEMISTRY, COPPER, ZINC,
PANCREAS, LIVER FUNCTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1936/1708
CIRC ACCESSION NO--AP0103474
STEP NO--UR/0502/70/016/001/0075/0079
UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R002203330004-4"

CIRC ACCESSION NO--A00103474
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--11SEP70

ABSTRACT. ADMINISTRATION OF 100 MG THYROID
EXT.-100 G-DAY FOR 20 DAYS TO MALE RATS DEPRESSED THEIR BODY WT. BY
19-30PERCENT AND THE WT. OF THEIR THYROID GLANDS DECREASED FROM 15.6 TO
9.1 MG-100 G. INTACT ANIMALS HAD 0.665 MG PERCENT ZN IN THEIR BLOOD,
3.114 MG PERCENT IN THE LIVER, AND 1.670 MG IN THE PANCREAS AND RATS
GIVEN THYROID EXT. HAD 0.394, 1.927, AND 0.480 MG PERCENT, RESP. CU IN
INTACT RATS WAS 0.155, 0.339, AND 0.226 MG PERCENT, RESP. SERUM
THYROID EXT. 0.258, 0.482, AND 0.172 MG PERCENT, RESP. IN EXPLT. RATS.
CERULOPLASMIN WAS 27.9 UNITS IN INTACT AND 42.09 UNITS IN EXPLT. RATS.
THE NO. OF ISLETS AND PERCENTAGE OF ENDOCRINE TISSUE IN THE PANCREAS
DECREASED IN THYROID TOXICOSIS; SERUM SUGAR WAS INCREASED AND LIVER
GLYCOGEN DECREASED.

UNCLASSIFIED

Acc. Nr:

AP0050814

Abstracting Service:
CHEMICAL ABST.

Ref. Code:

5-70 UR0502

98347c Effect of the hypofunction of the thyroid gland on
glycogenesis and RNase activity of the liver. Kovtunyak, N.
A.; Tsapok, P. I.; Meshchishen, I. F. (Chernovits. Med. Inst.,
Chernovitsy, USSR). *Probl. Endokrinol.* 1970. 16(1), 64-7
(Russ). Blocking of the thyroid gland function in rats with
6-methylthiouracil (10 mg/100 g orally for 20 days) increased the
liver glycogen and K levels and decreased the blood sugar, K,
and Cu and liver Cu levels. 6-Methylthiouracil action reduced
the protein content and increased the RNase activity of the liver.
The increased enzymic activity may be connected with the in-
creased liver K and the RNA breakdown may lead to disruption
of protein biosynthesis.

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USSR

TSAPYGINA P. I.

"Role of the Central Nervous System in Regulating Cell Division and Radio-sensitivity of Chromosomes in Rat Corneal Epithelial Cells"

Leningrad, Issledovaniya po Genetike, No 4, 1971, pp 54-61

Abstract: The conditioned reflex method (with an electric current serving as an unconditioned stimulus, blue-green light as a conditioned stimulus, and blue-yellow-green light as a differentiating stimulus) was used to study the effect of the nervous system on cell division and induction of chromosomal aberrations in the corneal epithelial cells of CC57BR and CC57W rats. After formation of a positive conditioned reflex, the animals responded to both the unconditioned and conditioned stimulus with a significant decrease in the mitotic index in the corneal epithelium, whereas the differentiating stimulus did not have this effect. X-irradiation of the animals 2-1/2 hours before presentation of the conditioned and unconditioned stimuli resulted in a lowering of the level of induced chromosomal aberrations in cells fixed 24 hours after exposure. It is suggested that the unconditioned stimulus (electric current) altered the concentration of hormones in the blood, creating an additional block of all the mitotic stages and a lengthening of interkinesis. This created favorable conditions for the repair of potential breaks.

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STUDY OF CHROMOSOMAL ABERRATIONS IN PERIPHERAL BLOOD LEUKOCYTES
AFTER THERAPEUTIC IRRADIATION -U- PROCESSING DATE--09OCT70
AUTHOR--TSARANOVA, L.I.
COUNTRY OF INFO--USSR
SOURCE--MEDITSINSKAYA RADIOLOGIYA, 1970, VOL 15, NR 4, PP 23-27
DATE PUBLISHED--70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--CHROMOSOME, LEUKOCYTE, RADIOTHERAPY, RADIATION HEMATOLOGIC
EFFECT, CANCER, SKIN, DIGESTIVE SYSTEM, GENITOURINARY SYSTEM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/0941
CIRC ACCESSION NU--AP0109098
STEP NO--UR/0241/70/015/004/0023/0027
UNCLASSIFIED

023
CIRC ACCESSION NO--AP0109098
ABSTRACT/EXTRACT--(U) GP-C-

UNCLASSIFIED

PROCESSING DATE--09OCT70

ABSTRACT. THE AUTHOR SETS FORTH THE RESULTS OF STUDIES OF THE INFLUENCE OF THERAPEUTIC IRRADIATION ON CHROMOSOMES OF PERIPHERAL BLOOD LEUKOCYTES IN 7 PATIENTS WITH CANCER OF THE ESOPHAGUS AND IN 5 PATIENTS WITH CANCER OF THE URINARY BLADDER. THE FREQUENCY OF CHROMOSOMAL ABERRATIONS DURING 48 HOURS OF INVESTIGATION AFTER SINGLE LOCAL IRRADIATION OF PATIENTS WITH A DOSE OF 300-400 RAD AND A DOSE OF 800-1000 RAD ON THE SKIN DOES NOT CHANGE. A COMPARISON OF THE DATA DERIVED WITH THE RESULTS IN VITRO TESTIFIES TO THE FACT THAT PARTIAL IRRADIATION OF THE BLOOD IS 5-6 TIMES LESS THAN THE SKIN DOSE.
FACILITY: INSTITUT MEDITSINSKOY RADIOLOGII AMN SSSR, OBINSK.

UNCLASSIFIED

1/2 030 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--EFFECT OF DOSE FRACTIONATION DURING THE IRRADIATION OF DORMANT PEA
SEEDS BY COBALT 60 GAMMA RAYS -U-
AUTHOR-(02)-TSARAPKIN, L.S., TSARAPKINA, K.A.
COUNTRY OF INFO--USSR
SOURCE--RADIOBIOLOGIYA, 1970, 10(1), 89-93
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--VEGETABLE CROP, COBALT ISOTOPE, GAMMA IRRADIATION, RADIATION
BIOLOGIC EFFECT, RADIATION DAMAGE, RADIATION DOSAGE, CHROMOSOME
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1977/0234 STEP NO--UR/0205/70/010/001/0039/0093
CIRC ACCESSION NO--AP0119230
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119230

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. DRY SEEDS (4PERCENT H SUB2 O) AND MOIST ONES (17-18PERCENT H SUB2 O) WERE IRRADIATED IN A SINGLE DOSE OF 15 KRADS AT RATES OF EITHER 42-50 RADS-MIN OR 4.2-5.0 KRADS-MIN OR IN A 15-KRAD DOSE FRACTIONATED ACCORDING TO THE FOLLOWING SCHEME: 2 TIMES 7.5; 3 TIMES 5.0; 6 TIMES 2.5; AND 12 TIMES 1.25 (FOR 5 HRS AND AT A DOSE RATE OF 4.2-5.0 KRADS-MIN). WHEN CHROMOSOME ABERRATIONS WERE EVALUATED, A LOWER CYTOGENETIC EFFECTIVITY WAS OBSD. WITH THE HIGHER DOSE RATE. THE DAMAGE INCREASED (FROM ABOUT 26PERCENT TO ABOUT 53PERCENT) WITH AN INCREASING DEGREE OF FRACTIONATION. HOWEVER, THIS WAS VALID ONLY FOR MOIST SEEDS.

FACILITY: INST. MED. RADIOL.,

OBNIINSK, USSR.

UNCLASSIFIED

USSR

UDC 615.372:576.851.553].012.6

TSARAPKIN, V. P., Ufa Institute of Vaccines and Sera imeni Mechnikov

"Preparation of Purified Sorbed Botulinus Toxoid Type F. Report II.
Activity of Crude Toxins and Toxoids"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 11, 1971,
pp 105-108

Abstract: Determinations were performed on filtrates of type F Cl. bolutinum growth on enriched peptone medium. Sterilizing filtration causes only an insignificant loss in the activity of the preparation. After a 2-3 month storage at 4-6°C, the toxicity of crude toxins decreases by a factor of 15,000-30,000, while the antitoxin-binding activity falls by a factor of 3 and more. Incubation of the filtrates at 37°C for 20-27 days in the presence of 0.4% formalin destroys about 60% of the initial activity, yielding crude toxoids with an activity of up to 1.15 BU/ml. A durable test toxin (suitable for titrations in mice) can be obtained by precipitating the filtrate with ammonium sulfate, dissolving the precipitate in crude toxin, and diluting the concentrated mixture with an equal volume of glycerine. A sample of the test toxin prepared in that manner contained 14 BT/ml and retained its activity for 1 year.

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SAKAPKINA, K. A.

CO: JPRS 55100

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UDC 582.736-148-116.9:576.312.32.095.14.629.78.048

EFFECT OF FLIGHT FACTORS ON RADIATION DAMAGE TO CHROMOSOMES IN DORMANT PEA SEEDS

Article by L. S. Sakapkin, L. V. Alekseyenko and K. A. Sakapkina; Moscow, Kozhicheskaya Biological Institute, Russian. Vol 5, no 6, 1971, pp 31-35, 10 refs.

for publication 25 June 1971, pp 31-35, 10 refs.

Abstract: Dormant pea seeds with a moisture content of 7.0-7.5 percent exposed before flight to ⁶⁰Co gamma irradiation in doses of 5 and 10 kilorads were carried aboard the Kosmos-368 artificial earth satellite during the postirradiation period. A synchronous experiment was conducted 5 days after the launching. The experiment was aimed at the changes in the ambient atmosphere aboard the satellite and was also followed by a "transport" control. Mitotic activity and chromosomal aberrations in first cycle of cell division after vorting, the percentage of dividing cells remained unaltered despite the exposure used. An analysis of the cytogenetic data by the statistical variations method revealed no effects from satellite flight, the ambient atmosphere, and delivery to the launching site. The damage level correlated only with the irradiation doses.

It is well known in radiobiology that irradiated dormant plant seeds react relatively easily to different external factors by a decrease or increase in the degree of radiation damage. The many data from experimental investigations which have now been accumulated enable us to postulate that the modifying influence exerted on radiation damage by spaceflight factors, constituting the overall and multifaceted effect. This paper gives the results of an experiment for studying the effect of spaceflight factors, the Kosmos-368 artificial satellite on radiation damage of chromosomes in dormant pea seeds.

1/2 030
UNCLASSIFIED
TITLE--EFFECT OF DOSE FRACTIONATION DURING THE IRRADIATION OF DORMANT PEA
SEEDS BY COBALT 60 GAMMA RAYS -U-
AUTHOR--(02)-TSARAPKIN, L.S., TSARAPKINA, K.A.
PROCESSING DATE--23OCT70
COUNTRY OF INFO--USSR
SOURCE--RADIOBIOLOGIYA, 1970, 10(1), 89-93
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--VEGETABLE CROP, COBALT ISOTOPE, GAMMA IRRADIATION, RADIATION
BIOLOGIC EFFECT, RADIATION DAMAGE, RADIATION DOSAGE, CHROMOSOME
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1997/0234
STEP NO--UR/0205/70/010/001/0039/0093
CIRC ACCESSION NO--AP0119230
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119230

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DRY SEEDS (6PERCENT H SUB2 O) AND MOIST ONES (17-18PERCENT H SUB2 O) WERE IRRADIATED IN A SINGLE DOSE OF 15 KRADS AT RATES OF EITHER 42-50 RADS-MIN OR 4.2-5.0 KRADS-MIN OR IN A 15-KRAD DOSE FRACTIONATED ACCORDING TO THE FOLLOWING SCHEME: 2 TIMES 7.5; 3 TIMES 5.0; 6 TIMES 2.5; AND 12 TIMES 1.25 (FOR 5 HRS AND AT A DOSE RATE OF 4.2-5.0 KRADS-MIN). WHEN CHROMOSOME ABERRATIONS WERE EVALUATED, A LOWER CYTOGENETIC EFFECTIVITY WAS OBSD. WITH THE HIGHER DOSE RATE. THE DAMAGE INCREASED (FROM ABOUT 26PERCENT TO ABOUT 53PERCENT) WITH AN INCREASING DEGREE OF FRACTIONATION. HOWEVER, THIS WAS VALID ONLY FOR MOIST SEEDS. FACILITY: INST. MED. RADIOL., OBNINSK, USSR.

UNCLASSIFIED

USSR

UDC 615.372:576.851.553].012

TSARAPKIN, V. P., Ufa Institute of Vaccines and Sera imeni Mechnikov

"Preparation of Purified Sorbed Botulinus Type F Toxoid. I. Comparison of Various Nutrient Media for Determining the Activity of Botulinus Type F Toxoid"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, 1971, pp 28-30

Abstract: To obtain native and purified botulinus type F toxoids, the author studied toxin formation of strain 470 on Gluzman's medium, liver broth, media with hydrolysates of whale meal and casein, and several variations of Martin's medium. The antitoxin-binding capacity and toxicity of the Cl. botulinum type F culture was greatest after 6 days of growth on media containing Martin's peptone. After refrigeration for 30 days at 4 to 6°C, the antitoxin-binding capacity and toxicity of the culture remained unchanged and in some series even increased slightly (due to lysis of the microbial cells and release of additional toxin into the medium).

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USSR

UDC: 621.373.531.3(088.8)

TSAREGORODTSEV, F. T.

"A Device for Modeling an Impulse Radio Signal With Random Initial Phase"

USSR Author's Certificate No 253453, filed 25 Jun 68, published 26 Feb 70
(from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2G277 P)

Translation: This Author's Certificate introduces a device for modeling an impulse radio signal with random initial phase. The device contains a low-frequency oscillator, a square pulse generator, a noise generator connected to a low-frequency filter, an electronic block of nonlinearities, a memory unit and a phase shifter based on operational DC amplifiers, and an electromechanical multiplication module. To expand the functional possibilities of the device, the output of the low-frequency oscillator is connected through the phase shifter to an electronic key whose second input is connected to the output of the square pulse generator, which is also connected through a differential network and a semiconductor diode to the output of the memory unit, and the filter output is connected through the electronic block of nonlinearities to the second input of the memory unit, whose output is connected to the second input of the phase shifter.

1/1

Psychology

USSR

TSAREGORODTSEV, G.

"The Psychosomatic Problem and Medicine"

Moscow, Meditsinskaya Gazeta, 5 Jul 72, p 3

Abstract: I. P. Pavlov demonstrated that the psychic and the somatic are aspects of a single process. There is some evidence that psycho-emotional factors can have highly specific effects in the development of somatic illnesses, though the extent of the specific psychological action on the somatic is sometimes overemphasized. The rapid pace of life in the scientific-technological revolution, elimination of strenuous physical labor, and mass communication, all of which place great demands on man's psychic and emotional functions, have caused psychogenic medicine to concern itself less with functional disorders of the nervous system than with the role of psychic factors in causing serious morphological destruction of somatic organs. Man's increasing physical weakness strengthens the influence of pathogenic psycho-emotional factors. Biologically active substances, emotionally emitted to prepare man for strenuous labor, can become pathogenic in persons who do no physical work. Urbanization and other social changes have led to isolation of the individual. The development of strong

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USSR

TSAREGORODTSEV, G., Meditsinskaya Gazeta, 5 Jul 72, p 3

interpersonal relationships, both local and international, is an aid to the
psychic health of the population.

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- 38 -

TSAREGORONTSEV, G.

PUBLIC
Health

SOJPRS 5419
600 71

PROTECTION OF WORKERS' HEALTH IN THE LIGHT OF THE DECISIONS OF THE 24TH
CONGRESS OF THE CPSU
Article by Professor G. Tsaregorontsev, Moscow, Soviet-Labor Correspondence,
Moscow, No 8, 1971, pp. 3-6

(1971 08 20)

(1971)

The 24th Congress of the CPSU will go down in history as an event of universal historical importance. On the basis of creative use of Marxist-Leninist principles, the Congress defined the prospects for development of our society in the next period. It has armed the Party, the entire Soviet people, with a scientifically substantiated line, with a socioeconomic and ideological-political program for the next, the ninth five-year period (1971-1975). This program is based on concern for the Soviet citizen, for his welfare and health.

The report delivered by L.I. Brezhnev, Secretary-General of the Central Committee of the CPSU (CC CPSU) as the 24th Congress analyzed the most important problems pertaining to the building of communism in our country, to development of the international revolutionary movement, and formulated the chief objectives and directions of Party work in the next five years.

In the Report of the CC CPSU, concrete directions, and directive pertaining to the five-year plan are indicated the concrete means of developing and improving the material and technical base of communism, of improving the well-being of the nation. It is stated in the directives of the 24th Congress that the chief objective of the ninth five-year plan is to raise considerably the material and cultural standard of living on the basis of the rapid development of socialist industry, of increasing its effectiveness, of scientific technological progress, and faster growth of productivity of labor.

Improvement of living conditions for the people is the highest priority in the activities of the Communist Party and our government; it constitutes the practical implementation of Lenin's concern for man's welfare and health.

The actual income per capita constitutes the most precise complex index of national welfare. This index includes all of the material and spiritual assets that Soviet citizens receive in the form of various benefits, free service, etc.

General

USSR

BILIBIN, A., Professor, Member, Academy of Medical Sciences USSR, and
TSAREGORODTSEV, G., Professor, Doctor of Philosophical Sciences

"Medicine and Society"

Moscow, Nauka i Zhizn', No 2, Feb 70, pp 77-79

Abstract: The authors reflect with many misgivings on the effects of the scientific and technological revolution on human health and on the practice of medicine. They deplore the increasing tendency toward the "veterinarianization" of medicine, i.e., looking upon man not as an individual but as a set of diseases and symptoms to be measured by means of instruments and treated in the same way. While the accumulation of facts goes on apace, synthesis is lagging far behind. This "arrhythmia" results in increasing differentiation and ever narrower specialization of scientists as well as physicians, with adverse effects on the quality of medical care. The rapid tempo of technological progress and the introduction of increasingly complicated machines are making demands beyond the adaptive capabilities of the human body, although they have conferred numerous benefits. Automation and cybernetics are essential, but they must be subordinated to the practice

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USSR

BILIBIN, A., and TSAREGORODTSEV, G., Nauka i Zhizn', No 2, Feb 70, pp 77-79

of a humane medicine, a medicine oriented toward the integral human organism. The physician must acquire the ability to distinguish between science and pseudoscience, with its typical fetishization of methods and research techniques.

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- END -

- 100 -

TSAREGORODTSEV, G. I.

medicine

SO:JPRS 54435

9 Nov 71

UDC: 61:061.621:37.035.4

PRESENT STATUS AND OBJECTIVES OF IDEOLOGICAL EDUCATION IN SCIENTIFIC INSTITUTES OF THE USSR ACADEMY OF MEDICAL SCIENCES IN THE LIGHT OF THE DECISIONS OF THE 24TH CONGRESS OF THE CPSU

(Article by G. I. Tsaregorodtsev)

SSSR, Moscow, No 9, 1971, pp 19-31

Since we approve completely of the decisions of the 24th Congress of the Party, agree to abide unflinchingly by and to implement them, we must analyze the status of ideological education in the USSR AMS [Academy of Medical Sciences], draw conclusions consistent with the new tasks formulated by our Party, and develop measures directed toward implementing the decisions of the congress.

Status of Ideological Education Work

All ideological education and methodological work in the USSR AMS has been pursued under the slogan of carrying out the ideas of V.I. Lenin and the decisions of the Party.

The main forms of organization of ideological work at the institutions of the USSR AMS are: 1) methodological and theoretical ideological education through a network of Party education (philosophical seminars, schools of fundamental Marxism and Leninism, circles, political information, schools of fundamental methodological conferences, etc.); 2) ideological education defined in the current and prospective plans under the guidance of the Party office, admission, Young Communists League and trade-union organizations; 3) mass agitation and lectures, intramural and extramural, for broad sections of the population; propaganda of Marxist and Leninist ideas, of achievements in medical science and public health in the press, on the radio, and on television.

In addition to these forms, the actual productive work at scientific institutions, its theoretical ideological and methodological direction are very important to ideological education work. Organization of such work and its creative spirit affect the scientific production of institutes and laboratories, and it is reflected in the scientific research objectives set forth, in the business dealings with other institutes of the USSR AMS, in international contacts, etc.

medicine

SO: JPRS 54435

4 MAY 71

UDC: 616-052.001.11

SOME METHODOLOGICAL ISSUES PERTAINING TO PAATHOLOGY IN THE LIGHT OF THE CONCEPTS
ON FORMS OF ORGANIZATION OF LIFE

(Article by G.I. Tatarskiy, Ye. M. Polenkova, Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, 1971, No 9, 1971, pp 13-14.)

The cardinal general biological and philosophical problems of the essence of life are closely linked and intertwined with the theoretical and methodological aspects of medicine. Success of the latter relies on disclosure, on the depth of understanding, and practical conquest of the mechanisms of vital phenomena.

Every new line added to our knowledge about the basic aspects of life and mechanisms of disease, new skill can be acquired to treat and prevent them. Definition of information about the essence of life could stimulate the search for and awareness of a hitherto unknown class of possible disturbances in vital activity, methods of investigating them, means of preventing and removing them.

The influence of conceptions on the essence of life on medicine proceeds in several directions. On the one hand, through dissemination and refutation of other hand, in the course of penetration of biological concepts into medicine. When substantiating the theory and practice of medicine concepts into medicine, important general biological positions as the principle of adaptation of the organism to its environment, the principle of evolution of living matter, etc., organization, etc.

Both these aspects of interaction between concepts on the essence of life are closely interrelated. The methodological principles on the basis of which we evolve general concepts on the nature of life are based not only on philosophical positions but also they are a generalization of the data in biological sciences related to the internal dialectical development of biological knowledge as a whole.

By virtue of this correlation, general biological principles considered in their methodological aspect become, to some extent, the methodological principles of theoretical pathology.

ISAREGORODTSEV, G. I.

SO:JPRS 53272

03 JUN 71

UDC: 610-036.78-02:614.4

SOME METHODOLOGICAL ISSUES IN THE USE OF EPIDEMIOLOGICAL METHODS FOR INVESTIGATION OF NONINFECTIOUS PATHOLOGY (FROM TREATMENT OF THE INDIVIDUAL PATIENT TO INVESTIGATION OF THE CAUSES OF MORBIDITY AMONG LARGE CONTINGENTS)

(Medicine)

[Article by G. I. Isaregorodtsev, G. Kh. Shingarov (Moscow); Moscow, Vostok Akademii Meditsinskikh Nauk SSSR, Russian, No 4, April 1971, pp 38-43]

The specific distinction of development of science of our times is the broad integration of its different branches. And this occurs first of all due to penetration of the methods of some sciences into others. Thus, many modern scientific disciplines emerged at the "junction" of classical ones.

Another tendency is also observed in contemporary science. Processes development of matter, are being projected on other, lower, more "fundamental" concepts, universalization thereof in science, and, from the philosophical point of view, "ontologization" thereof. A classical example is Lenin's interpretation of reflection as a universal property of matter. The history of philosophy shows that before Lenin, this concept was referred by matter of man and higher animals. V.I. Lenin brought it down to the mental activity of matter. At present this is a definite truth for us, proved by the entire historical course of development of science. The same has occurred with the concepts of "information" and "probability."

We know that all concepts about "probability" emerged on the basis of "practice" in games of chance and the insurance business. But subsequently this concept acquired a universal nature and is today used in the study of all areas of reality.

Apparently, something similar is occurring in medicine. This must explain the violent debates that are flaring up more and more often around the question of "noninfectious epidemiology" or "use of epidemiological methods in noninfectious pathology."

011
TITLE--PROBLEMS AND JUDGMENTS: THE NEW MACHINE: FROM BLUEPRINT TO SERIES
PRODUCTION --U-
AUTHOR--TSAREGORODTSEV, YU.
COUNTRY OF INFO--USSR
SOURCE--PRAYDA, AMRCH 30, P. 2
DATE PUBLISHED--30MAR70
SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES
TOPIC TAGS--BONUS, ECONOMIC PLANNING ORGANIZATION, ECONOMIC SYSTEM,
INDUSTRIAL FACILITY MANAGEMENT, FINANCE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1999/0883
CIRC ACCESSION NO--AN0122927
STEP NO--UR/9012/70/000/000/0002/0002
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE---04DEC70

CIRC ACCESSION NO--AN0122927

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT.

THE INCENTIVE FUNDS FOR THE ASSIMILATION OF NEW MACHINERY ARE FAR SMALLER THAN THE BONUSES THAT COULD BE PAID FOR THE STABLE OR AT EVEN HIGHER RATES RISING PRODUCTION OF OBSOLETE MACHINERY AND MECHANISMS. AS IS KNOWN, THESE FUNDS ARE FORMED THROUGH DEDUCTIONS TO THE MINISTRY OF 1PERCENT OF THE TOTAL PLANNED WAGE FUND FOR INDUSTRIAL PERSONNEL. THIS MONEY IS THEN DISTRIBUTED ACCORDING TO THE PRINCIPLE OF SHARE AND SHARE ALIKE, AT APPROXIMATELY THE SAME LEVEL YEAR AFTER YEAR. AT OUR PLANT, THE ANNUAL INCENTIVE FUND FOR ASSIMILATING NEW MACHINERY IS ONLY 40,000 RUBLES. WE ARE NOT ABOUT TO SAY THAT THE AWARDED OF BONUSES FOR NEW MACHINERY FROM THE CENTRALIZED FUND, THE SIZE OF WHICH IS NOT LINKED TO ACTUAL ACHIEVEMENTS IN THIS FIELD, IN ITSELF CONTRADICTS THE SPIRIT AND LETTER OF THE ECONOMIC REFORM. REGRETTABLY, IT MUST BE ADMITTED THAT WITHIN THE FRAMEWORK OF THE REFORM VIRTUALLY NO EFFECTIVE USE HAS YET BEEN MADE OF EVEN THE MEASURES THAT WERE OUTLINED AT THE START, NAMELY: THE BROAD DIFFERENTIATION OF PRICES AND THE FLEXIBLE MANEUVERING OF NORMATIVES FOR ALLOCATIONS TO THE INCENTIVE FUNDS, DEPENDING ON THE SHARE OF NEW ITEMS IN THE ENTERPRISE'S PROGRAM. IT SEEMS TO ME THAT THE U.S.S.R. STATE PLANNING COMMITTEE'S INTERDEPARTMENTAL COMMISSION, WHICH IS IMPROVING THE REFORM'S LEVERS, SHOULD TAKE MORE FULLY INTO ACCOUNT INSTANCES LIKE THOSE CITED ABOVE AND SHOULD WORK OUT A MORE EFFECTIVE MECHANISM OF INCENTIVES FOR TECHNICAL PROGRESS.

FACILITY: V. I. LENIN NEVA

MACHINE BUILDING PLANT.

UNCLASSIFIED

USSR

UDC 669.71.018.9

ZOLOTOREVSKIY, Yu. S., RUDOMETOV, V. S., SEREBRIYSKIY, E. I., SINYAVINA, N. P.,
TSAREGORODTSEVA, A. I.

"Study of the Relationship Between Structure of Ingots and Properties of Pressed
Semifinished Goods of an Alloy in the System Al-Zn-Mg with $Zn/Mg \approx 0.5$ "

Metallurgiya [Metallurgy -- Collection of Works], No. 13, Leningrad, Sudostroyen-
iye Press, 1970, pp. 121-127. (Translated from Referativnyy Zhurnal Metallurgiya,
No. 5, 1971, Abstract No. 5 G172 by the authors).

Translation: The influence of crystallization rates on the microstructure of
an alloy in the system Al-Zn-Mg is demonstrated. The inherited nature of struct-
ural elements of the ingot is established. 3 figs; 4 tables; 7 biblio refs.

1/1

USSR

UDC 669.71.017:620.18

TSAREGORODISEVA, A. I. and SEREBRIYSKIY, E. I.

"Structural Investigation of Ingots of Alloys of the System Al-Zn-Mg"

Metallovedeniye Splavov Legkikh Metallov-Sbornik, Moscow, "Nauka", 1970, pp 49-51, resume

Translation: Results are presented of an investigation of ingot structures of alloys of the system Al-Zn-Mg with relations $Zn/Mg \sim 0.5$ and $Zn/Mg \sim 0.2$, cast by a semicontinuous casting method. It is demonstrated that, as a result of a non-equilibrium crystallization in ingots of these alloys, excess phases develop on grain boundaries of the eutectic type: $\alpha + \beta$ (Al_3Mg_2)+ $T(Al_2Mg_3Zn_3)$ and $\alpha + T(Al_2Mg_3Zn_3)$, and also intermetallic phases: $AlMg(Mn, Cr)$; $Al_6(Mn, Fe)$; Mg_2Si ; $AlSiMnFe$; $AlSiFe$; Al_6Mn ; and Al_3Fe . Investigations of the liquation and composition of excess phases were carried out by methods of metallographic and microx-ray spectral analyses and by measuring the microhardness. Two figures, three bibliographic references.

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- 5 -

1/2 022
UNCLASSIFIED
TITLE--FEATURES SPECIFIC TO THE COURSE OF EXPERIMENTAL CEREBROCRANIAL
INJURY IN DEMYELINIZING OF THE NERVOUS SYSTEM -U-
AUTHOR--(02)-GANNUSHKINA, I.V., TSAREGORODTSEVA, T.M.
PROCESSING DATE--13NOV70
COUNTRY OF INFO--USSR
SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 49,
NR 6, PP 93-102
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ENCEPHALOMYELITIS, BRAIN, EDEMA, LEUKOCYTE, NECROSIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3004/0571
STEP NO--UR/0219/70/049/006/0098/0102
CIRC ACCESSION NO--AP0131194
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131194

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CEREBROCRANIAL INJURY IN EXPERIMENTAL ALLERGIC ENCEPHALOMYELITIS IS CHARACTERIZED BY MARKED EDEMA, ALTERATION OF NERVE AND GLIAL CELLS, LEUKOCYTIC REACTION OF THE NECROTIC STAGE. CEREBROCRANIAL INJURY AT THE STAGE OF ELIMINATION OF BREAK UP PRODUCTS AND INITIAL ORGANIZATION OF DEFECT OF THE CEREBRAL SUBSTANCE IS CHARACTERIZED BY AN INTENSIVE CELLULAR PROLIFERATION AND DEMYELINIZATION OF PERIVASCULAR LOCALIZATION IN THE REGION OF THE TRAUMATIC FOCUS AND AT A SIGNIFICANT DISTANCE THEREFROM. FACILITY: INSTITUTE OF NEUROLOGY OF THE ACADEMY OF MEDICAL SCIENCES OF THE USSR, MOSCOW.

UNCLASSIFIED

UNCLASSIFIED
TITLE--ANAPHYLACTIC REACTIONS IN EXPERIMENTAL ALLERGIC ENCEPHALOMYELITIS
-U-
AUTHOR--TSAREGURDITSEVA, T.M.
COUNTRY OF INFO--USSR
SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69,
NR 5, PP 50-52
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ENCEPHALOMYELITIS, GUINEA PIG, ANTIGEN
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1999/0294
CIRC ACCESSION NO--AP0122496
STEP NO--UR/0219/70/069/005/0050/0052
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0122496

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN 100 GUINEA PIGS THE AUTHOR ESTABLISHED THAT IN EXPERIMENTAL ALLERGIC ENCEPHALOMYELITIS THERE DEVELOPS A STATE OF AUGMENTED HYPER SENSITIVITY OF THE ANAPHYLACTIC TYPE, THE INTENSITY OF WHICH IS MOST PRONOUNCED IN THE PREPARALYTIC PERIOD AND DECREASES UPON THE APPEARANCE OF NEUROLOGICAL ALTERATIONS. ANAPHYLACTIC REACTIONS WITH BRAIN TISSUE ANTIGENS HAVE A MARKED ORGANSPECIFIC CHARACTER, THEY MAY BE CAUSED WITHIN ONE YEAR AND, IN A NUMBER OF CASES ARE TRANSMITTED TO THE SUBSEQUENT GENERATION OF ANIMALS. ANAPHYLACTIC SHOCK, INDUCED BY INTRAVENOUS INJECTION OF BRAIN TISSUE ANTIGENS EMPLOYED FOR SENSITIZATION AT EARLY STAGES OF THE DISEASE INHIBIT THE SUBSEQUENT DEVELOPMENT OF ALLERGIC ENCEPHALOMYELITIS. FACILITY: INSTITUTE OF NEUROLOGY OF THE ACADEMY OF MEDICAL SCIENCES OF THE USSR, MOSCOW.

UNCLASSIFIED

USSR

UDC 681.325.65

SUBBOTINA, G. V., and TSAREGRADSKIY, F. I., Institute of Problems in Control (Automation and Telemechanics)

"Device for Converting Binary Code With Unipolar Representation of Information to Binary Code With Bipolar Representation of Information"

USSR Authors' Certificate No 312377, Cl. H 03 k 13/00, filed 14 Apr 70, published 12 Oct 71 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 5, May 72, Abstract No 5B187P)

Translation: The invention is related to the field of automation and computer technology and can be used for the construction of logic and calculating devices. Most well-known types of standard digital elements, including semiconductor micromodular elements, are devices with unipolar representation of 0 and 1: i.e., the binary digit is represented in them by the presence or absence of a signal. It is known that the representation of a binary digit by means of heteropolar pulses has a number of advantages due to the sharp increase in the noise immunity and functional stability of elements and the expansion of their logical capabilities. Elements with bipolar inputs have appeared at the present time (for example, magnetic threshold elements or FDE-500 type elements). If it is necessary to combine them with unipolar elements, the number of the

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- USSR

SUBBOTINA, G. V., et al., USSR Authors' Certificate No 312377

latter has to be doubled. At the same time, well-known devices for changing from unipolar to bipolar elements have a number of shortcomings which limit the range of their practical application. The purpose of the invention is to simplify the circuit of a device for converting binary code with unipolar representation of information to binary code with bipolar representation of information, based on a branched magnetic core. In the proposed converter the write winding is laid out on one of the jumpers of the split section of the core, while the output winding is coiled like a figure eight on both jumpers of the split section, with the jumpers differing in length.

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USSR

TSAREGRADSKIY, L. YE. and BORIMSKIY, YU. S.

"Method of Synthesis of Binary Codes Correcting Individual Asymmetrical Errors"

Avtomatiz. Upr. Prom. Predpriyatiyami [Automation of Control of Industrial Enterprises], Kiev, Tekhnika Press, 1973, pp 66-68 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V422)

Translation: A new procedure is suggested for coding in the synthesis of a nonlinear code correcting individual asymmetrical errors, allowing the volume of memory necessary for storage of the code to be reduced. An example is presented of the performance of the coding procedure suggested.

Author's view

1/1

USSR

TSAREGRADSKIY, L. Ye., CHERNYY, N. Ye., MAKSIMENKO, A. A.

"Tree-Type File Processing Subroutines for the Minsk-22 Digital Computer"

Avtomatiz. Upr. Prom. Predpriyatiyami [Automation of the Control of Industrial Enterprises -- Collection of Works], Kiev, Tekhnika Press, 1972, pp 107-110 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V646, by the authors).

Translation: Problems of the organization of tree-type files encountered in development of automatic control systems are studied. A set of standard programs for processing of tree-type files is described. In particular, the set includes the operations of formation of information retrieval files, as well as certain other standard file processing operations. The problem of placement of information in the file is presented as a "knapsack problem."

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USSR

TSAREGRADSKIY, L. Ye.

UDC 51:621.391

"Algorithm for Optimal Coding of Number Sequences"

Kiev, V sb. Prom. kibernetika (Industrial Cybernetics--collection of works) 1971, pp 131-138 (from RZh--Matematika, No 10, 1972, Abstract No 10V475)

Translation: Suppose we have a set of sequences $\{a\}$, $a = (a_1, a_2, \dots, a_n)$, where $0 \leq a_i \leq m-1$ are integers and

$$k_1 \leq \sum_{i=1}^n a_i \leq k_2,$$

and let N be the number of all such different sequences for given n, m, k_1 , and k_2 . An algorithm is proposed in this work for numbering such sequences: i.e., giving to each sequence a number included within the limits of 0 and $N-1$. V. Zinov'yev

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- 60 -

USSR

UDC: 681.3.001:51

TSAREGRADSKIY, L.Ye.

"Coding of Binary Sequences Containing a Small Number of Ones"

Sistemy i Sredstva Avtomat. Upr. [Automatic Control Systems and Equipment -- Collection of Works], Kiev, 1970, pp 168-171 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No. 3, 1971, Abstract No. 3B36 by VB).

Translation: The author studies a method for decreasing the number of binary digits necessary for transmission and storage of binary sequences in which the mean number of ones is less than the mean number of zeros. Algorithms for coding and decoding of code (block position code) (BPC) are presented. It is indicated that the BPC, although not optimal, allows a significant decrease in the mean length of a coding sequence with high values of the ratio of the number of bits in the sequence to the number of binary ones in the sequence. An example of the use of BPC in an information compression problem is presented.

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ISAREGORODTSEV, G. I.

SOME METHODOLOGICAL ISSUES IN FORENSIC MEDICINE

(Article by G. I. Isaregorodtsev, G. I. Shilinskii (Moscow); Leningrad, Vsesoyuznyy Nauchnyy Tsentr, Russian, No 3, 1972, pp 69-76)

UDC: 340.6

SPRS 56019
17 MAY 72

In the era of scientific and technological revolution the role of methodology of scientific research is increasing sharply. In turn, as it is stressed in the decisions of the 24th Congress of the CPSU, the ideological struggle between bourgeois and Marxist-Leninist world outlooks is becoming more acute. Both these processes are specifically manifested in such a branch of scientific knowledge and practical activity as forensic medicine which, in a bourgeois society, has its own "representation" in a number of popular reactionary philosophical and sociological theories. The methodological and ideological acuity of some issues considered by forensic medicine is intensified because of its borderline position. Forensic medicine is in the vanguard of medical sciences that interact directly with issues dealing with man's social conditions, the theory and practice of justice, protection of life, health, freedom, and dignity.

In this article we shall try to formulate some of the methodological issues in forensic medicine and to demonstrate the unrelenting ideological struggle whose influence also extends over issues in this science. We shall also make a critical analysis of Lombrosianism [Lombroso was an Italian criminologist and physician] (the so-called anthropological school of criminal law) and its current variant, neolombrosianism. But we shall consider this trend in bourgeois law and forensic medicine from methodological and ideological positions, and not from the standpoint of its actual invalidity.

If one tries to formulate the most important methodological issues in forensic medicine, in one of the first places one should mention the correlation between social and biological elements, the problem of quality, the structure and function, and others. Of course, all these issues play a primary role in a general methodological role in all branches of medicine as a complex science. But at the same time, they have specific, "sectorial" distinctions as applied to forensic medicine.

TSAREGORODTSEV

G I

ON THE SIGNIFICANCE OF MILITANT MATERIALISM (FIFTEEN ANNIVERSARY OF PUBLICATION OF V.I. LENIN'S ARTICLE UNDER THIS TITLE)

[Article by G.I. Tsaregorodtsev (Moscow); Vestnik Menedzha Noditselinskikh Nauk SSSR, Russian, No. 3, 1972, pp. 3-11]

For 10 years, contemporary public opinion [thinking], all forms of social consciousness, our entire spiritual culture have experienced the fruitful influence of Lenin's ingenious work, "On the Significance of Militant Materialism" which is a unique philosophical legacy of our Leader's, the credo of our ideological front.

It was motivated by publication of the first issue (No 1-2) of a new journal, Pod Znamenem Markizma (Under the Banner of Marxism) in February 1972.

In its definition of the objectives of this new journal, the editorial board passed over the problem of Party spirit, struggle of ideologies, correlation between philosophy and natural science, between philosophy and politics, and did not formulate the chief objectives in the area of propaganda of scientific and atheistic outlook and struggle against religious ideology. The objectives of this new Marxist journal were formulated in the spirit of academic objectivism and cognitive enlightenment.

At the time the situation was difficult in our country. In view of exacerbation of the class struggle during the NEP [New Economic Policy] period there was revival and intensification of reactionary localistic trends hostile to dialectical materialism. Positivist, decadent, and religious-mystical views prevailed in philosophy, natural and social sciences. Bourgeois reactionaries, after smugly defeat in open armed combat against Soviet power during the period of foreign intervention and civil war, began to use actively all forms of "peaceful" struggle: philosophy, science, art.

In his article, V.I. Lenin intended to rectify the fallacious position of the editorial board of Pod Znamenem Markizma and to work out the program for its work. But the article went beyond this framework, it constituted a Party in the area of ideology for many decades.

JPRS 56019
17 MAY 72

USSR

UDC: 51:621.391

TSAREGRADSKIY, L. Ye.

"Algorithm for Optimum Coding of Number Sequences"

Kiev, Prom. kibernetika--sbornik (Industrial Cybernetics--collection of works), 1971, pp 131-138 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V475 by V. Zinov'yev)

Translation: Let there be a set of sequences $\{a\}$, $a=(a_1, a_2, \dots, a_n)$, where the whole numbers $0 \leq a_i \leq m-1$ and $k_1 \leq \sum_{i=1}^n a_i \leq k_2$, and let N be the number of all such different sequences for given n, m, k_1, k_2 . In this paper an algorithm is proposed for denumerating such sequences, i. e. assigning to each sequence a number included in the interval from 0 to $N-1$.

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USSR

UDC 546.718

SPITSYN, V. I., KUZINA, A. F., TSARENKO, A. F., OBLOVA, A. A., BALAKHOVSKIY, O. A., KODOCHIGOV, P. N., GLAZUNOV, M. P., and KAYMIN, I. V.

"Synthesis of Metallic Technetium and its Physical Investigations"

Leningrad, Radiokhimiya, Vol 12, No 4, 1970, pp 617-621

Abstract: Highly pure metallic technetium in the form of a silver-gray powder or compact metal (regulus) was produced from tetraphenylarsonium pertechnetate $(C_6H_5)_4AsTcO_4$ by hydrogen reduction in an electric furnace. The resultant material showed superconductivity with a critical point of $8.2^\circ K$. A study of the technology for producing the metal from the initial pertechnetate showed that technetium dioxide is produced after one hour in a hydrogen atmosphere at $260^\circ C$, and the metal is produced at a temperature of $1000^\circ C$. X-ray structural analysis revealed that metallic technetium has a hexagonal lattice with dense atomic packing of the magnesium type, the lattice parameters being $a = 2.74 \pm 0.005$ and $c = 4.41 \pm 0.005$; $c/a = 1.609$. The radiometric and neutron activation methods of analysis showed extremely minute quantities of trace impurities: Ru-- 10^{-8} , Rh-- 10^{-14} , Al-- 10^{-5} , Na-- 10^{-3} and As-- 10^{-3} gm per gm of technetium. Within the limits of sensitivity of the neutron activation method, no other impurities were detected.

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USSR

UDC: 539.1.074

SHEVCHENKO, K. M., MINAKOVSKIY, V. M., and TSARENKO, N. V.
"Radiation Energy Sensor"

Leningrad, Priborostroyeniye, No 6, 1972, pp 119-121

Abstract: The sensor described in this paper overcomes the difficulty in radiometers with nonselective elements in which protective windows made of materials which are diathermal in the near infrared region have the effect of making the readings of the instrument depend on the infrared radiation spectrum, thus depriving the instrument of its basic advantage. The principle of the device proposed by the authors is based on the existence of a unique dependence between the radiation flux incident on its sensitive element and the difference in temperature between the center and periphery of the sensitive element. This latter is a disc of 4 mm in diameter, made of constantan foil 0.05 mm thick, soldered along its periphery to the end of a copper block. Part of the energy output by the foil flows radially to the block and part to the surrounding medium. The intensity of the incident energy is reflected in the aforementioned difference in temperature. A table of the technical characteristics of the radiometer using this type of sensor is given. The authors are with the Kiev Polytechnical Institute.

1/1

UNCLASSIFIED
TITLE--SPECTROPHOTOMETRIC METHOD FOR THE DETERMINATION OF GOMPHOTIN IN
GOMPHOCARPUS FRUTICOSUS -U-
AUTHOR--(02)-TSARENKO, N.YA., SHRAIBER, M.S.
PROCESSING DATE--16OCT70
COUNTRY OF INFO--USSR
SOURCE--FARMATISIYA (MOSCOW) 1970, 19(2), 39-41
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--PROCESSED PLANT PRODUCT, CHEMICAL ANALYSIS, PAPER
CHROMATOGRAPHY, SPECTROPHOTOMETRY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FAME--1997/0300
CIRC ACCESSION NO--AP0119288
STEP NO--UR/0466/70/019/002/0039/0041
UNCLASSIFIED

012
CIRC ACCESSION NO--AP0119288
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN EVALUATING THIS PLANT AS A
SOURCE OF GOMPHOTIN, MICROMETHODS MUST REPLACE THE USUAL BIOL.
PROCEDURES FOR TOTAL GLYCOSIDE DETN. THE QUANT. CALCN. INVOLVES ALC.
EXTN. OF THE RAW MATERIAL, PAPER CHROMATOG., AND SPECTROPHOTOMETRY OF
THE COMPOS. FORMED BY GOMPHOTIN PLUS SODIUM PICRATE. EXT. THE BIOMASS
WITH 70PERCENT ETOH. AFTE DISTG. THE ALC., TREAT RESIDUE WITH 15PERCENT
LEAD ACETATE. POOL SUPERNATANT AND WASH SOLNS. FROM THE PPT. AND EXT.
THE GLYCOSIDES WITH ALC. CHCL SUB3 1:3. FILTER THE ALC. CHCL SUB3 LAYER
THROUGH DRIED NA SUB2 SO SUB4, SHAKE WITH CHCL SUB3, AND FILTER. AFTER
DISTG. THE CHCL SUB3 ADD ETOH TO THE RESIDUE CONTG. TOTAL GLYCOSIDES AND
CHROMATOGRAPH BY THE ASCENDING METHOD IN CHCL SUB3 SATD. WITH FORMAMIDE
UNTIL THE FRONT ADVANCES ABOUT 30 CM. DRY 10 MIN AT ROOM TEMP. CUT 2
STRIPS, DEVELOP WITH 10PERCENT M DINITROBENZENE IN BENZENE AND 10PERCENT
NACL IN MEQH, AND MARK GOMPHOTIN SPOTS WITH PENCIL. ON THE UNDEVELOPED
STRIPS MARK AND CUT OUT PORTIONS WHOSE CENTER CORRESPONDS TO LOCATION OF
THE GOMPHOTIN SPOT; DRY AT 105DEGREES 30 MIN AND PLACE IN AN ELUTION
APP. WITH 70PERCENT ETOH 3-4 HR. IN A 10 ML MEASURING FLASK BRING
ELUATE TO VOL. WITH 70PERCENT ETOH AND SHAKE. FOR DETN., TO 5 ML OF
ELUATE ADD 5 ML NA PICRATE AND PLACE ON SPECTROPHOTOMETER IN 1 CM
CUVETTE LAYER. EVALUATE OPTICAL D. AT 495 NM BY COMPARING WITH
CALIBRATION GRAPH CONSTRUCTED AS DIRECTED. A FORMULA FOR DETG. PERCENT
CONTENT IS PRESENTED. FIVE TEST SERIES OF THE PLANT SHOWED GOMPHOTIN IN
THE RANGE OF 0.07-0.1PERCENT. FACILITY: KHARKOV. NAUCH.
ISSLED. KHIM. FAR. INST., KHARKOV, USSR.

UNCLASSIFIED

PROCESSING DATE--16OCT70

UNCLASSIFIED

USSR

TSARENKO, T. I.

"Integral of Wienerian Measure for Random Fields"

Teoriya Optimal'n. Resheniy [Theory of Optimal Solutions -- Collection of Works], Kiev, 1972, pp 52-62 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V152, by B. Rozovskiy).

Translation: This work is dedicated to the construction of a stochastic integral for Wienerian random measure $W(x, y)$ in the rectangle $[0,1] \times [0,1]$. The integral is defined for a broad class of random functions and has properties similar to the properties of a one-dimensional stochastic integral in the sense of Ito.

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TSARENKO, T. I.

"Theorem of Existence and Uniqueness of Solutions of the Stochastic Equation of Darboux"

Teoriya Optimal'n. Resheniy [Theory of Optimal Solutions -- Collection of Works], Kiev, 1972, pp 131-136 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V153, by B. Rozovskiy).

Translation: A study is made of the equation

$$\xi(x, y) = \varphi(x, y) + \int_0^x \int_0^y A(u, v, \xi(u, v)) du dv +$$

$$+ \sum_{k=1}^l \int_0^x \int_0^y B_k(u, v, \xi(u, v)) dw_k(u, v),$$

(1)

where $w_k(u, v)$ ($k = 1, \dots, l$) are independent Wienerian measures in the rectangle $[0, 1] \times [0, 1]$. For equation (1), a theorem is proven of the existence and uniqueness of solutions in statements near the requirements of possibility of the Lipschitz conditions and linearity of growth with respect to a three-dimensional variable for coefficients A and B_k .

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USSR

TSARENKO, T. I.

UDC: 519.2

"Solution of the Difference Analog of the Stochastic Problem of Gurs by the Method of Projecting Stochastic Gradients"

V sb. Mat. metody issled. i optimiz. sistem (Mathematical Methods of Studying and Optimizing Systems--collection of works), Kiev, 1971, pp 200-214 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V87)

Translation: The paper is a continuation of a previous work (see abstract 8V85). A method is given for finding a control which is optimum for a chain which approximates a continuous controlled process. R. Liptser.

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USSR

UDC: 519.2

TSARENKO, T. I.

"The Problem of Optimum Control of Stochastic Darbu Equations and the Method of Finite Differences"

V sb. Mat. metody issled. i optimiz. sistem (Mathematical Methods of Studying and Optimizing Systems--collection of works), Kiev, 1971, pp 28-50 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V85)

Translation: The author considers the stochastic equation

$$\xi(t_1, t_2) = \int_0^{t_1} \int_0^{t_2} a[s_1, s_2, \xi(s_1, s_2)] ds_1 ds_2 + \int_0^{t_1} \int_0^{t_2} b[s_1, s_2, \xi(s_1, s_2)] d\omega(s_1, s_2), \quad (1)$$

where $\omega(t_1, t_2)$ is a Wiener stochastic measure, $a(t_1, t_2, x)$, $b(t_1, t_2, x)$ are variable functions which are measurable with respect to set. It is proved that if the functions $a(\dots)$, $b(\dots)$ satisfy the Lipschitz condition and increase no faster than linearly (with respect to x), then a unique continuous solution exists for equation (1).

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TSARENKO, T. I., Mat. metody issled. i optimiz. sistem, Kiev, 1971, pp 28-50

The author then considers the case where the functions $a(\dots)$, $b(\dots)$ depend on control $u(t)$, i. e. $a(t_1, t_2, x) \equiv a(t_1, t_2, x, u(x))$, $b(t_1, t_2, x) \equiv b(t_1, t_2, x, u(x))$, where the $u(x)$ is such that the above mentioned assumptions hold for $a(\dots)$, $b(\dots)$.

The control $u^* = u^*(x)$ which minimizes the functional

$$N \int_0^{T_1} \int_0^{T_2} L(t_1, t_2, \xi(t_1, t_2), u(\xi(t_1, t_2))) dt \quad (2)$$

is selected from among such controls. It is shown that when certain assumptions are made relative to $L(\cdot)$, u^0 can be selected by minimizing functional (2) on realizations of a chain which approximates the solution of equation (1). R. Liptser.

Circuit Theory

USSR

UDC: 621.317.727.4

TSARENKO, V. T., DOBRYDEN', V. A., Members of the Scientific and Technical Society of Radio Engineering, Electronics and Communications imeni A. S. Popov

"Mathematical Description and Calculation of Static Operation of a Microwave Power Stabilizer With Semiconductor Attenuator"

Moscow, Radiotekhnika, Vol 27, No 7, Jul 72, pp 73-75

Abstract: The approximation of the control characteristic of a semiconductor microwave attenuator proposed in a previous paper (V. T. Tsarenko, R. A. Valitov, "Radiotekhnika i Elektronika", Vol 11, No 1, 1966) is not adequately precise in many instances. This article proposes a function $F_{\alpha}(x)$ which approximates the control characteristic with accuracy an order higher than the function used in the previous paper. The paper also contains an analysis and calculation of static operation of a microwave power stabilizer which are based on the use of the function $F_{\alpha}(x)$. It is found that the proposed approximation accounts for the saturation actually observed in the power transmission factor as a function of the controlling signal current due to the nonlinearity of recombination processes in the base of the semiconductor

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TSARENKO, V. T., DOBRYDEV', V. A., Radiotekhnika, Vol. 27, No 7, Jul 72, pp 73-75

element of the microwave attenuator. This reduces the error in the mathematical description of the properties of the attenuator and improves accuracy in the analysis and calculation of static operation of the stabilizer.

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USSR

UDC: 621.382

AKPEROV, Ya. G., IMENKOV, A. N., TSARENKOV, B. V., YAKOVLEV, Yu. P., "Order of Lenin" Physicotechnical Institute imeni A. F. Ioffe

"A Semiconductor Induction Element"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 10, Apr 73, Author's Certificate No 339248, Division H, filed 3 Aug 70, published 8 Feb 73, pp 194-195

Translation: This Author's Certificate introduces: 1. A semiconductor induction element which is a two-layer semiconductor structure with ohmic contacts. As a distinguishing feature of the patent, the Q of the controlled inductive reactance is sharpened and the range of the working frequency is extended by making the semiconductor structure from two different semiconductor materials of the same conductivity type. One of the layers has a fixed chemical composition with respect to thickness, and the other is a semiconductor of variable chemical composition. The width of the forbidden zone at the boundary of the semiconductor layers is greater than the width of the forbidden zone of the first semiconductor, and it gradually decreases as the ohmic contact is approached. 2. A modification of this element dis-

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AKPEROV, Ya. G. et al., USSR Author's Certificate No 339248

tinguished by the fact that the two-layer structure consists of a layer of GaAs and a layer of a solid solution of $\text{Al}_x\text{Ga}_{1-x}\text{As}$ of variable composition. On the boundary of the interface between these, x is greater than 0.3; on the boundary between the solid solution and the ohmic contact, x is less than 0.3.

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USSR

UDC 621.382.3

TSARENKOV, B.V., AKPEROV, YA.G., IMENKOV, A.N., YAKOVLEV, YU.P. [Physico-Technical Institute imeni A.F. Ioffe, Academy of Sciences, USSR, Leningrad]

"Temperature Dependence Of Edge Photoluminescence Of $n\text{-Ga}_{1-x}\text{Al}_x\text{As}$ Solid Solution Epitaxial Layers"

Fizika i tekhnika poluprovodnikov, Vol 6, No 4, Apr 1972, pp 677-681

Abstract: The edge photoluminescence is studied of crystals of $n\text{-Ga}_{1-x}\text{Al}_x$ ($0 < x \leq 0.4$) in a wide temperature range ($77 \div 370^\circ\text{K}$) for determination of the empirical dependences of the energy of the maximum ($h\nu_m$), halfwidth (δ) and the photon flux (Φ) of the edge radiation band, on the temperature T . The photoluminescence spectra of the solid solutions investigated contained only one band. The band was nonsymmetrical; the long-wave slope is steeper than the short-wave. The energy of the maximum of the band is changed from 1.45 to 1.90 e.v. (300° K) as a function of the composition of the solid solution with a change of x from 0.01 to 0.4; $h\nu_m$ is decreased with an increase of the temperature in the interval $77 \div 370^\circ\text{K}$ and with temperatures above $100 \div 125^\circ\text{K}$ the dependence of $h\nu_m$ on T can be approximated by the straight line $h\nu_m = h\nu_{m0} - \alpha T$, where $h\nu_{m0}$ is the characteristic energy resulting from extrapolation of the linear dependence $h\nu_m(T)$ in the interval $100 \div 370^\circ\text{K}$ to absolute zero temperature and α is the temperature coefficient which does not depend on the composition

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TSARENKOV, B.V., et al, Fizika i tekhnika poluprovodnikov, Vol 6, No 4, Apr 1972, pp 677-681

of the solid solution and is equal to $4.8 \cdot 10^{-4}$ e.v./degree. The halfwidth of the radiation band (δ) is decreased with an increase of x ; δ is linearly increased with an increase of temperature in the interval $77 \div 370^\circ \text{K}$. The temperature coefficient of the halfwidth of the band practically does not depend on the composition of the solid solution and is equal to $1 \div 1.5$ of the Boltzmann constant. The photon flux of the radiation band of solid solutions with a fixed level of excitation is exponentially decreased with an increase of temperature in the temperature range $77 \div 370^\circ \text{K}$. The mechanism of the radiative recombination is explained by a comparison of the energy of the maximum radiation spectra with a wide forbidden zone (E_g) of solid solutions of various compositions which are determined by the spectra of the short-circuit photocurrent of the structure Au-Ga_{1-x}Al_xAs with a metal-semiconductor barrier. The edge of the photocurrent spectra has a form characteristic of the base of absorption of light at the free excitons. Because the energy of the maximum of the photoluminescent spectra proved to be approximately equal to the width of the forbidden zone, determined by the energy of the free excitons, then this made it possible to assume that the radiation observed is inherent and not extrinsic. Because the halfwidth of the radiation band at high temperatures proved to be smaller than expected for

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TSARENKOV, B.V., et al, Fizika i tekhnika poluprovodnikov, Vol 6, No 4, Apr 1972, pp 677-681

interband transition, then this made it possible to assume that the inherent radiation contributes an important portion of the annihilation of the free excitons. The authors are grateful to D.N. Nasled for his interest and attention to the work. 4 fig. 15 ref. Received by editors, 2 Aug 1971.

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USSR

UDC: 621.382.3

IGNATKINA, R. S., KURGANOVA, N. Ye., KRASYUK, B. A., ~~ISKIN, S. S.~~
NEDEL'SKIY, M. P., RAVICH, V. N., ~~TSAPENKOV, B. V.~~, Moscow Coordinative
Institute, Physicotechnical Institute imeni A. F. Ioffe, Academy of
Sciences of the USSR, Leningrad

"The Gallium Phosphide Electroluminescent Dynistor"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 5, No 9, Sep 71, pp
1695-1699

Abstract: This paper describes sources of red and green light with an S-shaped current-voltage curve based on epitaxial gallium phosphide PNP structures -- electroluminescent dynistors. The electrical and electroluminescent characteristics and parameters of these devices are presented, and it is shown that the properties of electroluminescent gallium phosphide dynistors are similar to those of dynistors based on other materials.

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USSR

UDC 621.315.592

TSARENKOV, B. V., AKPEROV, YA. G., VERESHCHAK, N. I., YEVSTROPOV, V. V.,
IMENKOV, A. N., YAKOVLEV, YU. P. Physicotechnical Institute imeni A. F. Ioffe
of the USSR Academy of Sciences, Leningrad

"Diode Sources of Red Light made of Variband $Ga_{1-x}Al_xAs:Si$ p-n- structures"
Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 5, 1972, pp 921-925

Abstract: The results of the development and study of the properties of semi-conductor sources of red light based on variband $Ga_{1-x}Al_xAs$ p-n-structures alloyed with Si are discussed. These p-n-structures were created by epitaxial growth of a solid solution of $Ga_{1-x}Al_xAs:Si$ from a liquid Ga-Al-As-Si solution on an n-Ga-As substrate with cooling; the composition of the $Ga_{1-x}Al_xAs$ epitax-ial layer was smoothly varied in the direction of growth so that the width of the forbidden zone decreased from the boundary with the substrate with a gradi-ent of $(2-3) \cdot 10^{-3}$ eV/micron. The thickness of the p-region in the light diodes was 20-31 microns, and the n-region was 60-70 microns. Radiation was generated perpendicular to the plane of the p-n-junction or through the p-layer or through the n-layer of the p-n-structure.

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TSARENKOV, B. V., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 5, 1972, pp 921-925

The electric and electroluminescent characteristics of the $Ga_{1-x}Al_xAs$ p-n-structures with an area of 0.5 mm^2 at room temperature are as follows:
 1) the forward current increases exponentially with an increase in voltage ($I \sim \exp(qV/\beta kT)$ where $\beta = 1.4-1.6$) to voltages of 1.5-1.6 volts, and then it increases linearly (current cutoff voltage 2.0-2.1 volts); 2) the radiation spectrum consists in only one band with a peak energy of 1.72-1.76 electron volts which does not shift with current variation; 3) with an increase in current the radiation power first increases superlinearly (to 2 amps/cm^2) and then linearly (to 100 amps/cm^2); 4) the external quantum yield of the radiation is 0.5-0.6 percent for 20 milliamps and 0.6-0.8 percent for 200 milliamps; 5) the characteristic times of the transient electroluminescent processes decrease with an increase in current; they are 200 nanoseconds for small currents and 100 nanoseconds for large currents.

These light sources do not become degraded for at least 1,000 hours of operation with a forward current of 20 milliamps and an ambient temperature of $+70^\circ\text{C}$.

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USSR

UDC 621.382.2

GOL'DBERG, YU. A., RAFIYEV, T. YU., TSARENKOV, B. V., YAKOVLEV, YU. P.

"Surface-Barrier Metal-n-Ga_{1-x}Al_xAs Structures and Their Energy Diagrams"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 3, 1972, pp 462-466

Abstract: The surface-barrier metal (m) and semiconductor (s) structures based on solid solutions of n-Ga_{1-x}Al_xAs of different composition ($0 \leq x \leq 0.4$) alloyed with tellurium were created by chemical deposition of the metals (Au or In) on the surface of the solid solution. The dependence of the inverse capacitance of these m-s-structures on the voltage is linear, and by the slope of this straight line, the electron concentration in the solid solutions of different composition was determined. The dependence of the direct current on the voltage for voltages less than the contact potential difference is exponential, and the dimensionless coefficient $\beta = 1.01-1.15$.

In order to construct the energy diagram of the metal and solid solution, the square root of the short circuit photocurrent of the m-s-structures as a function of the energy of the incident photons was measured. This relation comprises two linear sections. By extrapolation of these sections to the zero value of the photocurrent, the height of the barrier and the width of the forbidden band of the solid solution were determined. On variation of the

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GOL'DBERG, YU. A., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 3, 1972, pp 462-466

composition of the $n\text{-Ga}_{1-x}\text{Al}_x\text{As}$ solid solution, the height of the metal-semiconductor potential barrier is directly proportional to the width of the forbidden band of the solid solution, and the proportionality factor is close to 2/3. The energy diagram of the metal- $n\text{-Ga}_{1-x}\text{Al}_x\text{As}$ structures arises mainly from the surface levels of the semiconductor a distance of 2/3 of the width of the forbidden band from the bottom of the conduction band and not from the work function of the metal and the energy of the electron affinity of the semiconductor.

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UDC 621.382.2

DMITRIYEV, A. G., NASLEDV, D. N., TSARENKOV, B. V.

"Inverse Branch of the I-U-Characteristic and Breakdown of the p-n-Structures in the Presence of Incomplete Ionization of the Impurity Centers (in the Example of GaAs p-n-Structures Alloyed with Si)"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 345-352

Abstract: Results are presented from a study of the inverse branch of the I-U-characteristic and electric breakdown of GaAs p-n-structures, the n-region of which is alloyed with fine donors (tellurium and silicon), and the p-region contains deep acceptor centers caused by introduction of Si atoms. The measurements were performed in the temperature range of 77-350° K. From analyzing the dependence of the photocurrent multiplication factor on the voltage and the dependence of the current on the voltage it was established that for all temperatures in the 77-350° K range the mechanism of electric breakdown of the p-n-junction is impact ionization.

The I-U-characteristic of the p-n-structure at voltages of $U > U_B$ (U_B is the breakdown voltage of the p-n-junction) has a different form for different temperature intervals: for temperatures near room temperature when a significant part of the acceptor centers of silicon in the p-region are ionized,

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the I-U-characteristic is linear ($I = U - U_B / R_s$ where R_s is the residual resistance of the p-n-structure) and at temperatures close to the temperature of liquid nitrogen when a significant part of the acceptor centers of the silicon are not ionized, the I-U-characteristic is exponential ($I \sim \exp \chi(U - U_B)^{1/2}$ where χ is the parameter of the p-n-structure).

The exponential dependence of the current on voltage after breakdown of the p-n-junction was caused by an increase in the hole concentration in the p-region as a result of ionization of the acceptor centers of the silicon with an increase in intensity of the electric field in the p-region of the p-n-structure (thermofield ionization of the impurity atoms -- the Frenkel effect).

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DMITRIYEV, A. G. and TSARENKOV, B. V.

UDC 621.382.2

"Electroluminescence Kinetics in Light Diodes"

Leningrad, Fizika i tekhnika poluprovodnikov, vol. 5, No. 8, 1971,
pp 1494-1502

Abstract: In the development of the new branch of semiconductor electronics known as optical electronics, one of the chief problems is increasing the reaction speed of the p-n junction devices, known as light diodes, which emit visible light. The purpose of the research described in this article is to consider the effect of the barrier capacitance of the p-n junction and the switching modes of the current through the diode on the latter's electroluminescence kinetics. Also considered is the relationship between the radiation intensity, the flux of injected electrons, and the time. It is assumed that the electron lifetime in the p region, caused by both radiation and radiationless recombinations, is independent of their concentration. Experiments performed with GaAs diodes in which the p region was alloyed with silicon verified expressions obtained for the relative increase and drop in

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